



US 20160242164A1

(19) **United States**(12) **Patent Application Publication**  
**Chmiel et al.**(10) **Pub. No.: US 2016/0242164 A1**(43) **Pub. Date: Aug. 18, 2016**(54) **CHANGE OF RATE MATCHING MODES IN  
PRESENCE OF CHANNEL STATE  
INFORMATION REFERENCE SIGNAL  
TRANSMISSION**(52) **U.S. Cl.**CPC ..... *H04W 72/048* (2013.01); *H04W 28/22*  
(2013.01); *H04L 5/0048* (2013.01); *H04W*  
*72/042* (2013.01)(71) Applicant: **Nokia Solutions and Networks Oy,**  
Espoo (FI)

(57)

**ABSTRACT**(72) Inventors: **Mieszko Chmiel**, Wroclaw (PL); **Timo**  
**E. ROMAN**, Espoo (FI)(73) Assignee: **Nokia Solutions and Networks Oy**(21) Appl. No.: **15/140,759**(22) Filed: **Apr. 28, 2016****Related U.S. Application Data**(63) Continuation of application No. 14/742,014, filed on  
Jun. 17, 2015, which is a continuation of application  
No. 14/160,890, filed on Jan. 22, 2014, now Pat. No.  
9,094,978, which is a continuation of application No.  
12/803,376, filed on Jun. 24, 2010, now Pat. No. 8,743,  
799.**Publication Classification**(51) **Int. Cl.***H04W 72/04* (2006.01)*H04L 5/00* (2006.01)*H04W 28/22* (2006.01)

In one aspect thereof the exemplary embodiments of this invention provide a method that includes, prior to confirmation that a network access node has correctly acquired capabilities of a user equipment, operating a user equipment with the network access node in accordance with a first rate matching mode and, only after confirmation to the user equipment that the network access node has correctly acquired capabilities of the user equipment, changing the rate matching mode to a second rate matching mode. In an embodiment the first rate matching mode comprises puncturing a downlink shared channel transmission with a set of resource elements, which may be at least one of reference symbols and muted resource elements, and the second rate matching mode comprises rate matching the downlink shared channel around those resource elements that are members of the set of resource elements. Also described are apparatus and computer readable storage medium storing program code that operate in accordance with the method.

